

The Citrus Industry

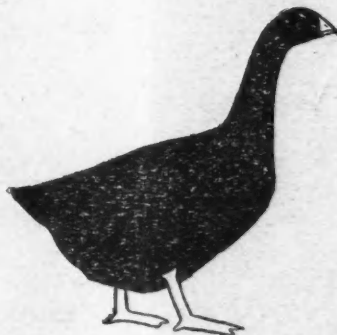
THE ONLY PUBLICATION IN THE WORLD
DEVOTED EXCLUSIVELY TO CITRUS FRUITS

Issued Monthly
Representative of every interest—
Representing no special interest.

VOL. 2

TAMPA, FLA., APRIL, 1921

NO. 4



The progressive grower and grower's association should realize the value of a nation-wide knowledge in times like these. Such growers and organizations will use the best judgment if they intrust their output to the American Fruit Growers Inc.,—an organization that has a clear vision of the situation and operates with speed and precision.

Unless extreme care is taken by marketing organizations fruit is going to be sold at a loss. The car that leaves the packing house must have a place to go where it is really wanted. The marketing organization that finds the place where the fruit will be welcome is the one that is going to get order out of confusion. More than this, the market must be found the first time, not after several explorations.

The American Fruit Growers Inc., has a most comprehensive view of the entire nation's market. Its complete organization, its close contact with every branch, district, and division point give it a definite understanding of what is needed, how much is needed and when it is needed.

We extend to every grower and grower's association the opportunity to secure reliable information, which we have at our disposal at all times regarding crop and market conditions, and will be glad to consult with you immediately regarding the marketing of your fruit for the coming season.

AMERICAN FRUIT GROWERS, INC.

ORLANDO, FLORIDA

Building Costs Reduced

EFFICIENCY INCREASED

Last month we proved to you that permanent, fireproof, re-inforced concrete construction **ACTUALLY COST LESS** than the most ordinary type of temporary buildings. This month we can demonstrate to you that we can effect **A FURTHER SAVING OF 25 PER CENT.** on former low costs.

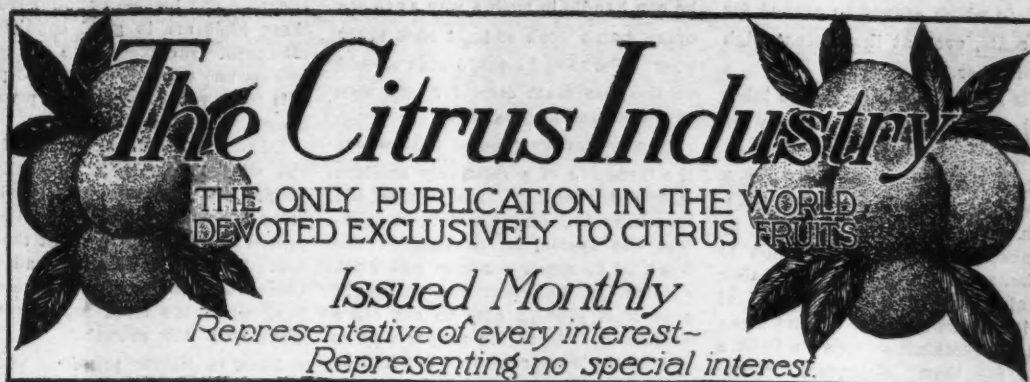
We have had large experience in the designing and construction of packing houses. Owing to the fact that the arrangement of machinery required a vast amount of floor space, a large investment in buildings was required to accommodate this machinery. We have now worked out a new method of sizing which enables us to effect a great saving in the cost of the building as well as in the cost of equipment, and at the same time reduce the operating expenses of the house.

As compared with the two-unit houses recently constructed (capacity 8 to 10 cars per day) we claim to cut the initial investment in building and equipment approximately \$20,000, and to reduce the operating expenses of the house 10 per cent.

If you are interested in the packing house feature of the citrus industry, we would suggest that you call on us and let us explain to you our new methods and designs and show you a sizer in actual operation.

Without obligating you in any way, we will be pleased to counsel with you on your packing house needs.





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Melanose of Citrus fruits

By C. A. Brown, Ft. Myers, Fla.

As the scientific side is best left to scientists, I will confine my remarks to the angle from which the growers must of necessity draw their conclusions. I may as well begin by saying that I know of no better method of control for this disease than the removal of all dead wood which has proven to be a breeding ground. Melanose, as I understand, is produced by a low form of plant life, or fungus, which first became noticeable as a serious enemy of the citrus tree directly following the big freeze of 1894-95, at which time its virulence became so evident that the United States government sent two scientists, named Webber and Swingle, to investigate the trouble and if possible find a remedy. These men spent some time studying the disease, and I believe found the cause and gave it the name it now bears. We might also say that they gave us the foundation for the work which has been continued up to this time. It has since been proven that severe frost damage has invariably been followed by apparent increase of Melanose.

Later, scientists isolated the spores of the fungus, and compared them with those which caused stem-end rot, but as yet I am sure that no one can tell us just what the essential difference is; and as they do similar damage, they may perhaps be classed and treated as one and the same thing as far as practical working details are concerned. In the case of the stem-end rot the trouble seems to start in the calyx of the fruit stem, generally on a heavily loaded and thereby weakened branch, often

maturity; from then on the two diseases act very similarly, causing the twig to die, then following back to the parent branch, and all the time causing the fruit to drop soon after acting as a hotbed of infection for any tender or weakened growth nearby. While stem-end rot seems to do most of its damage by dropping the mature fruit, which is often perfectly bright, Melanose begins with the first growth and works all through the growing season, making its most rapid strides while the trees are wet with dew or rain, at which time the spores of this fungus multiply in the form of minute hair-like runners, the cells of which are the active germs, and which are distributed by wind or rain, or any moving

object with which they come in contact. Whenever they lodge upon tender or weakened tissue they find a foothold and set to work. The disease does not seem to be very noticeable until the new growth begins to harden up; quite often the grower is not aware that his fruit is materially affected until his fruit begins to color, then to his intense surprise and sorrow it appears as though a strong acid had been showered on his fruit, causing irregular streaks or specks of rust which are so thoroughly imbedded in the rind that its removal would ruin the chances of getting the fruit to market in a sound condition. Upon investigation he will find that many of the twigs, especially water sprouts, are coated with the same brown rust, which often extends to the leaves, and, in the case of young trees, not infrequently causes the foliage to have the appearance of having been burned in spots.

I have been told, and from what I have seen, I can readily believe that Melanose is more prevalent this past season than for many years, and it seems that many people are justly alarmed at the situation confronting them. I know of no reason why a man should not be alarmed when he sees his trees showing more and more dead wood, and when in going over the market reports he sees that his fruit was about 75 per cent russets, and that they sold for perhaps fifty cents or more a box less than the brights sold for. Most of us who had rusty grapefruit this year know how much that extra half dollar means, yet I doubt if there is an average of one budded tree in fifty throughout

GIVES MOST INFORMATION Homestead, Florida, March 25. Editor Citrus Industry:

I have just read your March number and have acquired more useful knowledge therefrom than I have from any periodical since I arrived in the land of Paradise. I am enclosing check for a year's subscription—and continue sending it until I say "stop." I am a tyro in the citrus industry and want information—which is just what I get in The Citrus Industry. I consider Florida the garden spot of the world and Redlands (or Homestead) the asparagus bed.

DR. B. F. ECKMAN.

the state which cannot be pruned for fifty cents, even at the present high cost of labor.

This naturally brings up the labor question, in which I am sure we are all vitally interested. Most of us remember that three years ago last winter we had a severe cold spell, which was, of course, followed by Melanose generally in proportion to the damage done by the cold. Labor was already scarce, and on top of that it became our duty to send many of the remaining men to fight a worse foe than Melanose; consequently, many of us have not been able as yet to thoroughly clean the dead wood out of our groves. Until we do give our groves a thorough clean-up, pruning out and burning all dead wood, I am of the opinion that we will not get rid of this very troublesome disease. My experience has led me to think that the negro laborer commonly found in the orange groves of Florida is not as a rule competent to say when a tree is properly pruned. Therefore, we must take into consideration that if one has much pruning to do he must figure on a foreman of first-rate ability. Let me say that this foreman should be in perfect sympathy with the idea before him—wherever possible let the owner act as foreman—and that he only employ what men

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he can handle in such a way as to see every man's work at least once every hour. Perhaps 12 to 16 men should be the maximum crew for one man in the average grove.

The writer has found that where the trees are of a relatively uniform size and condition, and where the men have had some training in pruning, the system of contracting the work of so much per tree will work admirably. Let each man be taught that it is just as easy to cut off a branch or twig in the proper way as it is to do it improperly. Let him be fined or otherwise punished for leaving stubs, or for cutting wood that should not be removed. Teach him that to cut a twig once in the right place takes him just half as long as to cut it wrong and then have to recut. As the pruning is done let a careful man follow with a paint brush and carbolineum or coal tar, to paint all wounds larger than a five cent piece. This will act as a disinfectant, preventing the disease from being carried from dead or infected wood to the clean tissue.

When a man gets in practice he should be able to prune from six to 10 bearing trees in 10 hours, even when the trees are in quite bad condition. Each man should be provided with a picking ladder, pruning saw, one large and one small pair of

shears. The foreman should see that these tools are in good condition at all times. Our experience has taught us that any man who is a good picker will readily become a good pruner if properly instructed.

Of course, we all know that during the winter months is naturally the proper time to prune, and is by all means desirable. Most all good pruners are picking fruit at that season. Therefore, we find it advisable to do our pruning at any time of the year when the trees are not in full flush with new growth.

After a winter pruning, and just before the new growth appears, it seems advisable to give the trees a thorough spraying with one of the standard fungicides, such as lime and sulphur at a strength of 1 to 30 or 1 to 40. Any further spraying for the control of Melanose has not appeared to me as being practical. When all is said and done, I am thoroughly convinced that careful pruning out of all dead wood is the prime factor in the control of this disease. The man who prunes his grove clean at least once every year will soon be repaid, not only in dollars and cents, through the more vigorous and productive condition of his trees, but in the satisfaction of having his fruit go to market ready to compete with anything found there.

Want Present Green Fruit Law Retained

Resolution Passed by fruitmen's Club at Meeting

Held in Orlando, Florida, April 7

Upon motion duly made by Mr. S. O. Chase and seconded by Mr. S. J. Sligh, the following resolution was unanimously adopted:

Be It Resolved, That the present Florida green fruit law be not amended or changed and that all forces of the citrus industry unite to pass the bill providing an appropriation for the plant board.

Be It Further Resolved, That should the green fruit bill as drafted by the DeLand committee and presented at the DeLand meeting be presented to the legislature for enactment as a law, that in such event we favor the amendment of this bill to conform to the present green fruit law of California on oranges and with the addition thereto that it be made to also cover grapefruit, and with a further proviso that the inspection remain in effect until November 15 of each year, which law would be in

effect as follows:

"Oranges shall be deemed properly mature for shipment or sale under the provisions of this act when the juice contains soluble solids equal to or in excess of eight parts to every part of acid contained in the juice; and that grapefruit shall be deemed properly mature for shipment or sale under the provisions of this act when the juice contains soluble solids equal to or in excess of seven parts to every part of acid contained in the juice; the acidity of the juice to be calculated as citric acid without water of crystallization; provided that the oranges and grapefruit have attained to at least 25 per cent yellow or orange and grapefruit color before picking, and oranges and grapefruit which are substantially or at least 70 per cent colored at the time of picking shall be deemed properly mature for shipment or sale in-

respective of analysis of the juice; that the state shall provide adequate inspectors for the analysis of the fruit and enforcement of this law, which inspection shall remain in effect until November 15th of each year."

Be It Further Resolved, That we no not favor the enactment of any green fruit law that would give California citrus fruit growers and shippers an advantage over Florida citrus fruit growers and shippers, which would be the case if the DeLand bill was passed without amendment as above.

Be It Further Resolved, That we favor the furnishing of more inspectors than have been furnished in the past, so that the fruit may be properly inspected and the present law enforced.

New Grove Heater on the Market

The Oldsmar Frost Protector, which was fully described in a recent issue of The Citrus Industry, and which is being manufactured by the Oldsmar Tractor company at Oldsmar, Fla., is now ready to be placed on the market and active steps will be taken to introduce the heater during the coming winter season both in Florida and California.

This heater, it is claimed, has tested out a greater degree of efficiency than any heater now in use.

In speaking of a recent test made at Coldwater, Mich., Mr. H. D. Keller, the inventor of this heater, says:

"The following is a comparative test made between the best known heater now used in California and the Keller Frost Protector, on March 24, 1921:

"In this test the material used was a petroleum product known as distillate. This is sold in tank car lots at 6 cents a gallon at point of shipment, and averages about 40 degrees Baume; in fact, it is one of the cheapest petroleum products that is procured. In addition to the test herein mentioned, will say that with the Keller Frost Protector the temperature can be raised to any desired point on very short order. It is adapted not only to groves and orchards, but also in places where vege-

tables are grown, or any other place where it is desired to procure heat, since the heat is confined near the ground. The old smudge pot, which could not make heat without smoke, produced the impression that a smudge is necessary to protect from frost. This theory, however, has been exploded for several years, as it is the heat that does the work, not the smoke. It is a known fact that smoke is only the waste part of the fuel, and this is proven conclusively in the test that we have made. Although the heater used in the comparison was claimed to be smokeless, still enough smoke was produced to show a marked deficiency in heating value, as shown herein. After the completion of the test, the heaters used were opened. The California heater (which we will call heater No. 2) was sooted up considerably; in fact, after eight hours' operation (proven by a later test), it was found necessary to clean it out. The Keller Frost Protector (heater No. 1) was in splendid condition, without any trace of soot and with practically every bit of oil consumed. The latter was true also in the case of heater No. 2.

The Test

"There was one gallon of oil put into each heater. The size of the

room was 32x33x19 feet. All glass on one side, concrete on two sides and a wooden partition on the other side. The temperature of the room was 40 degrees Fahrenheit. Readings were taken every 20 minutes.

"Heater No. 2 consumed one gallon of oil in 1 hour, 50 minutes. It raised the temperature of the room based on an average of readings, 7.40 degrees.

"Heater No. 1 (Keller heater) consumed 1 gallon of oil in 2 hours, 45 minutes. It raised the temperature of the room, based on an average of readings, 9.55 degrees.

"The time in minutes of oil consumption for heater No. 2, multiplied by the raise in the temperature— 7.40×110 equals 814.00

"The time in minutes of oil consumption for heater No. 1, multiplied by the raise in the temperature— 9.55×185 equals 1,766.75.

"Then the ratio of efficiency is as 814 is to 1,766.75, showing that the Keller heater has an efficiency of 117 per cent over the other—in other words, will do 117 per cent more work.

"The object of both of these heaters is to protect against frost; the claim of the manufacturer of heater No. 2 is that between 40 and 48 should be used to the acre for citrus fruit. Less than half that number of Keller heaters are required. The above test was made in the presence of John Keller, Elmer Juckett and H. D. Keller, at Coldwater, Mich., March 24, 1921."

Demonstration at Tampa

On Wednesday, April 13, at the plant of the Tampa Shipbuilding and Engineering Co., Mr. H. D. Keller, the inventor of the heater, and his son, H. J. Keller, manager of the Oldsmar Tractor Co., gave a demonstration of one of the heaters now being turned out at the Oldsmar plant.

Representatives of The Citrus Industry and of the Tampa Tribune and Times were present at the demonstration and all were convinced that the Oldsmar Frost Protector will do all that its inventor claims for it and all that was shown by the earlier demonstration at Coldwater, Mich.

The plant at Oldsmar is now busily engaged in turning out the new heaters, and it is anticipated that many groves will be equipped with these oil burning protectors before another winter sets in.



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WHERE PROSPERITY LIES

REPLYING to the query, "Are you an optimist?" propounded by the editor of The Citrus Industry, one of the leading factors in the citrus field in Florida replied:

"An optimist? Yes—for the man whose fruit is raised right, packed right and marketed right. For such a grower, there is nothing but prosperity ahead. For the man who is satisfied with just an average crop of inferior or ordinary quality, who is indifferent as to packing and careless as to marketing, there will never be any money in the citrus game.

"The trade is more and more demanding fancy fruit, and is willing to pay the price to secure it. What was considered "fancy" fruit ten years ago, is not "fancy" fruit today. The public taste has been educated and the trade demand has changed until what satisfied a few years ago will not satisfy today. The successful grower must be ever on the alert to improve the quality of his fruit and the appearance of his pack. Having thus laid the foundation for success, he must pay equal heed to the marketing. If he does this, his success is assured.

"I am pretty familiar with fruits and am counted a fair judge of quality. Yet if I enter a store and see two piles of apples, one selling at 5 cents apiece and the other at ten, and the 10 cent article has the better appearance, I am pretty sure to buy the ten cent grade. Thousands of buyers apply the same rule to the purchase of oranges or grapefruit. It is the superior article, attractively packed and displayed, which demands the fancy price.

"I am an optimist; yes—but it is the optimism of higher quality of fruit, higher grade packing and highest efficiency in marketing service. Given these essentials, nothing can permanently check the prosperity of the intelligent citrus grower. Of course, we will have periods of temporary depression in prices, as will be the case with every agricultural product, but we will never have over-production of superior quality fruit, and even during the periods of temporary price depression, this high quality fruit will be marketed at a profit to the grower, as has been the case during the season just closing. Ordinary fruit may be profitable sometimes, but it will be the first to feel the effects of falling prices, and even when demand is highest and supply lowest, can never be as profitable to the producer as the higher quality fruit.

"The wise grower will cater to the 'fancy' trade, and

if he does so, his profits will make him an optimist—always."

The Citrus Industry believes that this prominent citrus factor has struck the keynote of the situation as it exists in the citrus field. To a greater degree than in almost any other line, the price of fruit is dependent upon quality and appearance. High-class fruit properly handled seldom sells at a loss to its producer; low-grade fruit improperly handled seldom returns a profit.

Better fruit may be obtained through attention to proper cultural methods, proper fertilization, proper spraying, proper cultivation and a careful study of conditions affecting the individual grove. Better appearance may be attained by proper attention to packing and handling. Back these up with proper marketing, and the success of the grower is assured.

FORESTRY AND COST OF ORANGES

HOW many lovers of oranges, apples, peaches and other fruits realize that their supply of these delicacies is dependent on the practice of forestry as well as of horticulture? Nevertheless, this is actually the case, and the explanation is simple, as the American Forestry association of Washington, which is campaigning for a national forest policy, points out. Fruits are almost universally shipped in wooden containers. Wood comes only from trees. And we are rapidly approaching the point where trees will no longer be available in sufficient numbers to meet even our present needs unless we practice forestry.

Boxes now absorb 15 per cent of the total lumber cut of the country. In Florida alone the growers of oranges and grapefruit already require more than 12,000,000 boxes a year to get their crop to market. If production continues to increase at the same rate it has in recent years, by 1930 they will require 40,000,000 boxes, or some 220,000,000 board feet of lumber. In addition the truck-growers of the state require 13,000,000 boxes annually and their demands are also increasing, according to the figures of the American Forestry association. These are but samples of the box requirements of farmers throughout the country.

Where is the lumber to build the boxes to come from? Florida fruit growers are already becoming alarmed at the steadily waning supply of southern yellow pine and are considering ways and means of meeting the situation. The answer is simple—to assure a permanent supply of timber by practicing forestry. This involves the harvesting of present stands in such a way as to secure the renewal of the forest, and the regulations of the cut so that the amount removed from the forest each year will equal approximately the amount grown. With the Snell forestry bill producers and consumers alike are vitally interested in seeing that a definite and comprehensive program along these lines is put into effect without delay.

FLORIDA'S EDUCATIONAL NEEDS

THE inability of a large number of Florida young women and young men to secure admission to the Florida institutions of higher learning because of lack of dormitory rooms and class room space during the last year, has aroused unusual interest in plans of the Board of Control to enlarge accommodations.

The proposed budget for the institutions of higher learning have been carefully prepared to provide the maximum increase in accommodations and teaching efficiency, at a minimum outlay of state money.

Men and women in the state who are not connected

with any of the institutions, but who are very much interested in enlarging the opportunities for educating our young people so that they may make better citizens, have given of their time in counseling with the presidents of the institutions and the members of the Board of Control in preparing the proposed budgets which will be submitted to the legislature for their approval.

The future development of teaching staffs for the rural and grade schools throughout the year depend to a large extent upon providing facilities for training in the University and Florida State College for Women our young people who wish to specialize in that work. If they do not get the proper education they cannot be so efficient as teachers of our boys and girls, which will place a handicap on our coming generation of children.

BUSINESS HIGH COST AND TREES

HOW the country is becoming dependent upon the west coast for its timber supply, and what this means to the consumer in the form of freight bills is one of the biggest questions before the business men of this country, says the American Forestry association of Washington, which is directing the campaign for a national forest policy. The association points to freight shipments from Oregon and Washington for a normal month prior to the recent increase in rates. They show that these states were shipping forest products to every state in the Union; Florida, with two carloads per month, receiving the smallest amount, and Minnesota, with 3,615 carloads, the largest. Even New York state, across the continent, was receiving 412 carloads per month. B. H. Snell, who introduced the Snell forestry bill in congress, is from this state.

A warning in the opinion of the American Forestry association is seen in the relation between shipments of forest products and other commodities. Normal monthly shipments from Washington and Oregon furnished the railroads 32,340 carloads of commodity freight, of which 21,270 carloads were forest products. The total freight revenues amounted to \$8,276,591.80, of which forest products paid \$6,508,007.77. In other words, forest products furnished 64.3 per cent of all freight shipments from these two states and 78.5 per cent of freight revenues, and as yet the eastern United States is hardly more than beginning to draw upon the west coast for its timber supplies. What will the situation be in another 10 or 15 years, when the present stands of southern yellow pine are largely things of the past?

These figures are illustrative of a situation which is bound to become more acute, according to the association, if prompt action is not taken to put our present non-productive and partially productive forest lands to work. The state of Connecticut, for example, now pays \$3,000,000 a year freight bills for the transportation of lumber from other forested regions. This amount is sufficient to replant each year one-eighth of the entire area of forest land in the state. Moreover, if Connecticut had been practicing forestry, any such expenditure would be wholly unnecessary, the association says, since under proper management, the state could produce its present consumption of saw timber on 86 per cent of its present forest area. Practically every state in the northeast is in much the same position, and the public everywhere is called to rally to the association's educational campaign.

The grove which is well cared for and well fed during the period of price depression is the grove which will be ready to respond when the price level has been readjusted on a profitable basis.

RECLAIMING AN OLD GROVE

THE Citrus Industry presents elsewhere in this issue a timely and valuable article from the pen of Mr. J. G. Grossenbacher on the rejuvenation of old and run-down groves. Mr. Grossenbacher is one of the best authorities in the state on matters pertaining to citrus culture and his article is one which will interest and instruct every student of cultural methods in the citrus grove.

It gives The Citrus Industry great pleasure to print this article from such an authoritative source, and we believe that the application of the methods described by Mr. Grossenbacher will result in the reclamation of many groves which now are proving unprofitable to their owners.

As this issue of The Citrus Industry goes to press, the Florida State Horticultural Society is holding its semi-annual meeting at Miami. A large attendance is reported and an excellent program of addresses is announced. A resume of the proceedings will be given in the next issue of this magazine.

The Federal Horticultural Board has promulgated new regulations, effective April 1, giving greater protection against importation of the black fly and other injurious insects into the United States, which is the result of the hearing held in Washington on December 20, attended by two directors of the Florida Development Board, officers of the State Plant Board, and a large number of citrus growers from Florida.

Your true optimist is the grower who can smile while pocketing a loss on a shipment of superfine Florida sweetness. Fortunately for the industry, there are many such men engaged in growing citrus fruits in Florida. They know there is a good time coming when prices will be right.

Dr. J. H. Ross, president of the Florida Citrus Exchange, is a genuine optimist. No man who is not an optimist has any business in the citrus game—either as a grower or as a distributor.

The manufacturer who declined to advertise last year because he could not keep up with his sales, is the same one who cuts his advertising appropriation this year because sales are low.

There have been few reports of the shipment of immature fruit from Florida this year. Growers and shippers have evidently learned a lesson from past experience.

As a side line, citrus growers should find the culture of a few pecan trees and grape vines a pleasant and profitable feature of grove work.

Just as attractive packages sell goods, so attractive citrus fruits bring the highest prices on the discriminative markets.

When your grove work ceases to interest you, it is time to sell your grove to some one who will take an interest in it.

Citrus sections of Arizona are fast coming to the front in the production of an excellent quality of grapefruit.

The wise grower nurses his young trees as carefully as a mother nurses her babe.

Rejuvenation of Unprofitable Citrus Groves

By J. G. Grossenbacher, Florida Insecticide Co., Apopka, Fla.

Many seedling groves and some of the oldest budded ones of the state are found deteriorating or going back owing to unknown or only partly understood reasons, as well as because of improper handling and actual neglect. Some growers, when confronted by unknown difficulties that reduce the returns from the grove respond by trying to overcome the trouble and the experiments thus instituted often lead to some most desirable results, while others meet with the same difficulty and fail. The results obtained by the more successful ones should become common property so that the citrus business as a whole may be fostered.

What is the most practical treatment for trees severely affected by foot-rot and gummosis? What is to be done when trees have withertip or are going back in general? How should an old neglected grove be rejuvenated so as to become profitable in a short time? What should be done with a bearing grove that gradually yields less and less fruit? What reducing yield probably indicates. Why do many thrifty-looking trees in some groves give such low yields of fruit, and what should be done with them? These are some of the questions one must often meet in the citrus business.

Starved and Bark-hardened Groves

Many of the older groves have become either unprofitable or are yielding only a slight profit for lack of proper care. Insufficient fertilizer and cultivation at some time in the past has given rise to trees (especially seedlings) with too many ascending branches that are nearly devoid of leaves and bearing wood, except at their distal ends. Figure 1 shows some trees of this type. The roots of trees in this condition are also bereft of most of their feeding or absorbing fibers. In other words, the activities of the food-transformatory (leaves) as well as those of the forage and supply organs (roots) have become so much reduced that the tree brings together barely enough to live, instead of accumulating a large surplus for the production of fruit. If the factors bringing on this unprofitable condition are allowed to continue, the long bare branches die back and many sprouts arise near the base, as may be seen in Figure 2.

The treatment in either case is

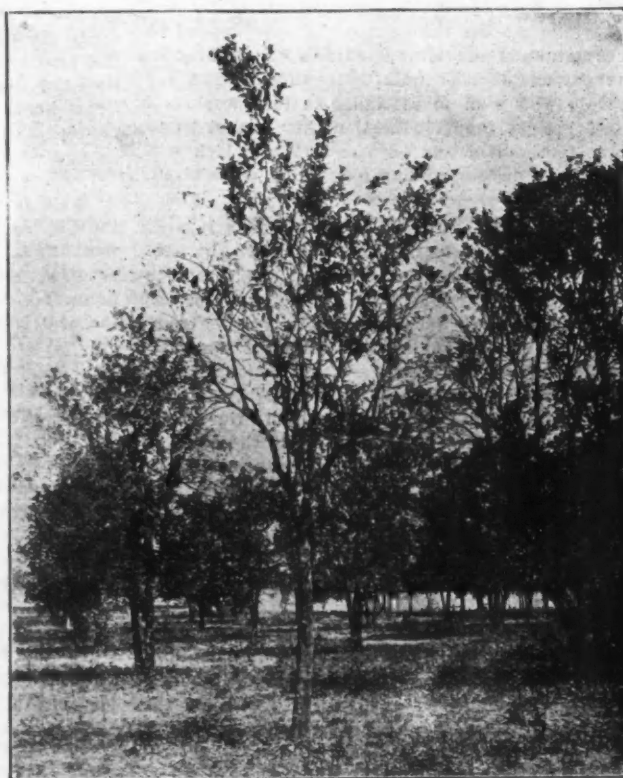


Figure 1. Orange trees with long ascending branches, but little bearing surface. Need cutting back to develop a profitable top.

practically the same and is suggested by this late-stage condition. The branches should be headed back in December or January and allowed to grow sprouts. In some instances it is desirable to thin the sprouts because they may come too thick. Those trees that reach the "withertip" stage before rejuvenation treatment is begun, should be headed back to the living parts of the branches. The soil should be heavily fertilized and thoroughly plowed and harrowed in spring, and kept stirred on the surface and free of weeds until June. Another application of fertilizer should be made in late May or early June. At the close of the cultivation period it is often desirable to give a light dressing of stable manure in case the land has been allowed to run down or burn out. This not only furnishes nitrogen, but puts the soil into good biological condition (encourages the development of helpful microbial life)

for the proper transformation of the food materials.

If such a bark-hardened, neglected grove is given better care and more fertilizer only, it may continue unprofitable from two to four years; while if the trees are cut back as suggested above, it may begin bearing the first, and give a good crop the second season after pruning. Figure 3 shows some results in March after heading back the preceding year. Many blossoms are present. Figure 4 shows a regenerated top on a tree pruned back after the old top had died.

In some instances of this kind it is perhaps best to prune the roots also when the top is headed back, so as to reduce the unnecessary length of the sparsely branched horizontal roots and bring their feeding areas closer to the trunk. This can be done easily by digging a trench around the tree about 10 feet from the trunk, about one and one-half feet deep, and

filling it up again as it is finished. (See also Citrus Leaf No. 6.)

The Crowding of the Trees

There are two very different phases of overcrowding to be considered: One of them has to do with

proposition one usually finds that the strongest advocates of close planting come from regions of abundant water supply, and that those advocating most strongly wide planting are drawing their conclusions from

setting, the difference in the net income from the two properties at the end of 15 years is astoundingly in favor of the closer planting. In fact, the difference is so marked that it seems practical and economical to set

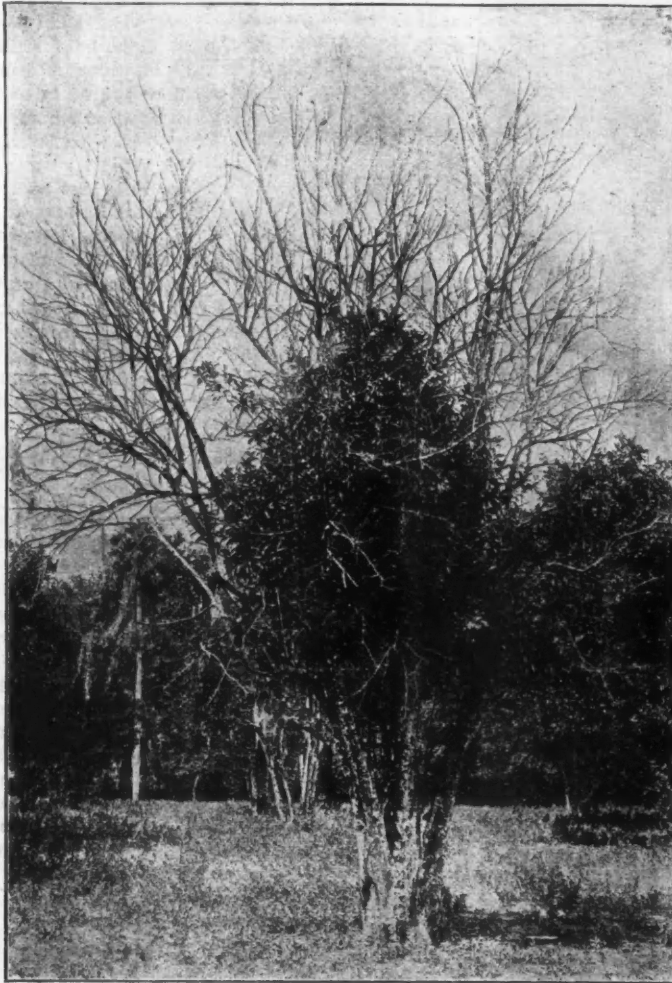


Figure 2. Nature's attempt to eliminate an undesirable top and supplant it by one of new growth having healthy bark. Should have been cut back like tree shown in figure 4.

the light exposure of a tree's foliage, and the other with the soil nutrient and water supply afforded the roots. If the soil is naturally or artificially fertile and moist enough, trees need only to be far enough apart to give their leaves enough light exposure so they can properly elaborate the raw foods supplied to them from the roots and air; while if the fertility and moisture supply are limiting factors the distance between trees must be regulated in accordance with these supplies.

A wide difference of opinion and practice prevails in Florida in regard to the number of trees that should be set per acre, but as a general

practice in sections where at least during a part of the year a water-shortage may prevail.

Now, as a matter of actual practice, groves in both of these types of localities are often set so as to give a high per-acre yield during the first 10 to 16 years, and in that way naturally suffer a reduction in yield a few years after reaching the climax. The advocates of fewer trees per acre see argument in this for wider planting. If the total per-acre yield of a grove that reaches its maximum yield 15 years after setting, is compared with the total per-acre returns from one planted to reach its maximum per-acre yield 30 years after



Figure 3. Orange tree that looked like figure 1 before cutting back, now developing low top.

trees close enough to attain maximum per-acre returns during the first 12 to 15 years, and then to cut out half of them in order to give growing room for the remainder. In reality, the supernumerary trees need not be a loss, for they may be utilized to fill gaps in other groves, as well as to make new groves; they grow as readily when transplanted as do nursery trees. I have seen hundreds of both orange and grapefruit trees from 15 to 60 years old transplanted to gaps in other groves, as



Figure 4. Budded orange tree that was cut back severely about a year and a half before this picture was made. Seems to have the vigor of a young tree now.

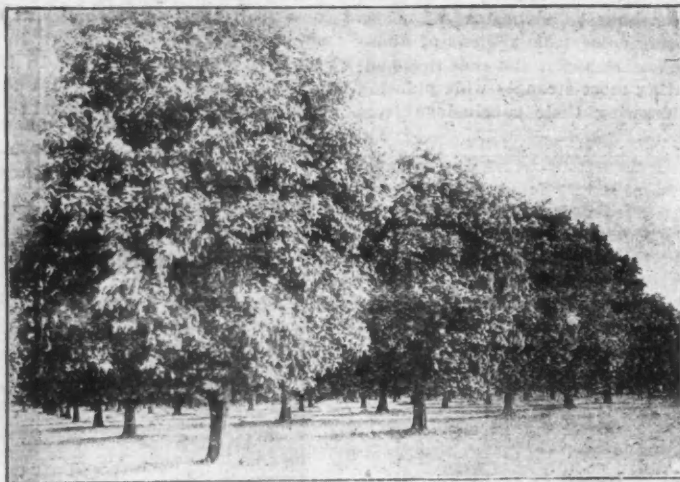


Figure 5. Portion of orange grove made from sixty-year-old trees taken from grove where trees were too crowded. The thinned grove as well as this, gives fine crops. be the yield the first few years after re-setting. Figure 5 shows a grove made from 60-year-old or re-setting.



Figure 6. Grapefruit trees cut back for budding or transplanting.

ange trees that were dug from a close-planted grove. Setting 15x30 feet is more profitable than 25x25 or 30x30 feet.

When it is desired to change the variety of the trees in such a crowded grove that should be done on alternate rows as shown in Figure 6, and then as soon as the new tops begin to crowd again, the grove should be thinned by transplanting a part of the unbudded trees to other places.

Trees should be cut back severely in preparation for transplanting. By consulting Figures 6 and 7, one gets a notion of some of the differences in practice, as regards the amount of cutting. As a matter of fact, the manner of the trees branching determines somewhat the amount of cutting back that is most profitable. It must be borne in mind that other things being satisfactory, the more surface for the new growth that can be left to start with, the greater will

The trees should be moved in December or January. On digging them out the root-stubs should be left from one and a half to three feet in length, depending upon their diameter; and the ends should be cut in such a way as not to be split or shattered. The soil should be carefully run in among the roots and tamped, and when about two-thirds of the hole is filled a large quantity of water (a barrel or more) should be poured in to aid in getting the soil settled among the roots. After the tree is set, a basin should be formed about its trunk by making a circular soil-ridge approximately three feet from its base, to be used later when watering the trees. Unless their roots are kept moist until after growth starts, some of the bark on the trunks or branches may die, especially if the air becomes dry before the new roots have started. This trouble can be largely avoided, however, by shading or wrapping with moss.

Diseased and Other Unprofitable Trees

Owing to the fact that citrus growers are in the business for profit, it is evident that every tree-space in the grove should yield its greatest possible returns. That often means much attention given to individual trees by way of pruning, spraying, bark surgery and fertilizing. When a bearing tree is severely affected with die-back, apply from two to five pounds of bluestone to the soil around it. If it has a mild case of gummosis, prune out the sparse foliated upper branches and apply more fertilizer and give extra thor-



Figure 7. Trees cut back less severely for transplanting. Had just put out the first growth after resetting. Trees in figure 5 had been cut back in this manner for transplanting. Most growers cut them back more severely.

ough and seasonable cultivation. The same treatment should be used for trees affected by foot-rot. In any

case, however, where a tree affected by gummosis or foot-rot has become unprofitable it should be dug up and

replaced by another at once. Any large patches of dead bark should be carefully pruned out of trees that are yet profitable by cutting at right angles to the bark surface, and, after a few weeks, the exposed wood should be covered with some good white-lead paint in order to avoid subsequent trouble with wood-rotting fungi like that shown in Figure 8. Use a two-inch brush.

The care of diseased trees and the proper handling of a grove in general are the most important items in citrus growing for profit, but it should also be remembered that there is a vast difference between the normal yield of fruit from individual trees, just as there is in the milk yield of cows and in the egg-laying of hens. Trees may be in good health and make a good growth every year and yet give such a low average yield of fruit that the grove gives low net returns. Such groves are as much in need of attention as those in which serious diseases occur. The worst trees should be rebudded at once with buds from high-yielding trees. Fertilization and cultivation should be given extra liberally for two or three applications, and by keeping individual records of the yield of the other trees some additional budding may be done the second year, if found necessary. A low-yielding grove rejuvenated in this way soon becomes a profitable fruit factory.



Figure 8. Wood-rotting shelf-fungus on orange tree. It does not appear on outside until after most of the wood has been rotted.

Some Advantages of the Florida System Of Fruit Inspection

By F. M. O'Byrne, Nursery Inspector, State Plant Board,
Gainesville, Florida

It is almost five years to the day since the State Plant Board, newly created, held its first meeting. A week later, at the board's second meeting, it was decided to reorganize the nursery inspection work. Previously the method of nursery inspection in Florida was the same as that in practically all of the other states. An inspector would examine the stock growing in the larger nurseries of the state once or twice a year. If it was apparently in good condition at that time the chief inspector would write out a certificate of inspection which was good for 12 months.

This system of inspection was highly unsatisfactory, for it was wrong in principle, doubly wrong. First, it presupposed that a compe-

tent inspector could look at a plant and tell definitely whether it was infested with some insect pest or disease. An inspector can't always tell. Second, it presupposed that a plant, if not infested, would not become infested during the next six or eight months while that certificate was valid.

This system of nursery inspection, which is still in vogue in most of the states, has been almost a complete failure from the start. Nursery inspection laws were passed to stop the spread of San Jose scale. Did they stop it? No, they did not. San Jose scale has been shipped into every state in the Union on certified stock. It has undoubtedly been shipped under the certificate of every nursery inspection department in the United

States. It is shipped on certified stock every day during the shipping season.

A host of pests have defied detection, and have been spread on certified nursery stock in the last few years. San Jose scale, fire blight, cottony cushion scale, white pine blister rust, Oriental peach moth, woolly aphis, crown gall, chestnut blight, citrus canker, and so the list goes. Citrus canker entered Florida on certified stock from two different states and from Japan. It was passed, I believe, by federal inspectors. It was shipped all over our state on certified stock; proof that inspection alone, no matter how rigorous, is insufficient.

There are many reasons why inspection alone cannot give proper

protection, the protection that the grower needs and deserves.

First: A nurseryman has a large sum invested in his business. If an inspector finds some pest in the nursery, he can't condemn it all and require the absolute destruction of all host plants of that pest, whether he actually finds them infested or not. The nurseryman would fight such a ruling in the courts and would win (except in cases of the most dangerous pests). The inspector must compromise by requiring the destruction of those plants actually found infested and by arranging for the fumigation, or for some other such precautionary treatment for the balance. It is impossible to cull out all the infested trees. Precautionary treatments are not perfect, so the pest spreads.

Second: An inspector is helpless when dealing with a new pest. (An inspector sees new and strange spots daily; 90 per cent of them are harmless.) He has no sixth sense to tell him instinctively when he encounters an unknown insect or disease whether it is going to be a serious one or not. He cannot slap on a blanket quarantine that will damage or ruin a nurseryman every time he sees a new spot. He must watch developments for awhile. If eventually he finds that the new trouble is a serious pest, he knows to his chagrin that stock he has been certifying as clean has been carrying that pest.

Third: It is impossible for an inspector to detect any disease in its early incipency. There is always an incubation period after infection when the disease is just getting a start inside the plant. During that period it is impossible for any inspector to tell whether the plant examined has the disease or not. It is much like asking a doctor whether a child he examines will come down with the measles or mumps during the next year.

Fourth: Most nursery inspectors are not doing their work as thoroughly as they would like to because of lack of funds.

Fifth: Occasionally nurserymen will conceal the presence of a pest from an inspector by having their employees inspect before the inspector's coming, pulling tell-tale leaves, pruning tell-tale twigs and spraying with a white covering of Bordeaux with plenty of lime in it. This covers disease spots completely and makes accurate inspection impossible.

If taken in time a pest can be eradicated completely from a com-

THE CITRUS INDUSTRY

ing to sell or move nursery stock are required to get their certificate tags from the nursery inspector, and must attach one tag to each container of stock moved. These tags are numbered consecutively (no two tags bear the same number), and the numbers issued to a nurseryman are recorded. He is required to show how each tag is used by furnishing the inspector with a record of his sales, showing the number and kind of plants sold to each customer and the numbers of the certificate tags used on each shipment. Simple, isn't it? It is just like keeping your check stubs or like keeping carbon copies of your letters.

Suppose that an inspector finds that a new, but innocent looking spot, noticed in a nursery on one inspection, is spreading rapidly and it turns out to be a very dangerous pest, what then? If there are no records of shipments being kept, the inspector realizes that the fat is in the fire. Either the state must resign itself to the fighting of the pest year after year for less than will be expended on it yearly, in control measures alone, if not eradicated. One of the most important points in any eradication campaign is to have promptly to hand a list of all points to which infected or suspected material has gone. This makes eradication possible at a reasonable figure.

To protect the horticultural and agricultural interests of the state, Florida has developed a new idea in nursery inspection. The nursery inspector is required to keep a record of all nursery stock legally set out in the state—from the nursery clear to the point where it is planted.

How is this accomplished, you may ask. Here is the plan: Those wish-year, or if it is to undertake eradication it will be necessary to send inspectors into every property in the state looking for plants from the diseased nursery. How expensive that is, and how slow. While the inspectors are working in some sections the disease will spread ahead of them in other sections. How different it is if records are available. The inspector has only to take out the folder containing the shipping records of the diseased nursery and he can figure out in a few hours the number of properties that are apt to be diseased, he knows their exact location. He can list them geographically by districts, send a separate inspector into each district and in a few weeks' time every property which has received trees from the diseased nur-

sery has been visited. Such prompt action will prevent local spread ahead of the inspector's coming, such as occurred in the canker campaign at Fort Myers, Largo, Wauchula and Groveland. The secret of success in eradication work is to "get there" quickly before the disease becomes thoroughly established in a community.

Someone has well said that the only man who never makes enemies is the man who never does anything. So likewise the only organization which meets no opposition is the one that never does anything. There has been some criticism of this new system of nursery inspection. It has come from three sources.

First: From nurseries in other states. These nurserymen object on the ground that it is a lot of trouble to make out the records that are required. It is quite troublesome, we admit it. But it is troublesome to keep a record of the checks you issue on stubs. It is troublesome to keep carbon copies of your letters. It is troublesome and more expensive to produce clean, sanitary milk, but in every case it is worth all the trouble it costs, and then some, to do the work right. The main trouble, we believe, is that these out-of-state nurseries are afraid that this idea will spread if they don't fight it. Each state that adopts the requirements increases their trouble. They put notices into all the catalogues they send to Florida points saying that due to the unreasonable requirements of the State Plant Board that they will not fill orders for nursery stock received from Florida. They state that they "have a clean bill of health" from their own state inspector, who is the equal of any in the country, and that Florida is the only state into which they are not permitted to ship. The whole letter is designed to prejudice the recipient deeply against the Florida requirements. In some cases they even urge that the recipient take the matter up and get a change in rules of officials. In other words, they would like to organize Florida citizens to turn out the present officials and put some one in who would let their stock in without keeping a record. Their statements charging discrimination are not correct, because we will let any nursery ship into the state if it can show that its stock is in good condition and if it will give us records of its shipments. It is of interest to note that the firm most active in this campaign has brought a num-

(Continued on Page 21)

A SPRAY SCHEDULE FOR CITRUS

The following spray schedule is the result of a conference held at Orlando, Fla., Feb. 27, 1919, participated in by H. R. Fulton, J. R. Winston and J. J. Bowman, pathologists, and W. W. Yothers, entomologist, U. S. Department of Agriculture; H. E. Stevens, pathologist and J. R. Watson, entomologists, Florida Experiment Station; and E. W. Berger, entomologist, State Plant Board.

This combined schedule is based on the work to date of state and federal investigators and represents their composite judgment regarding the control of certain citrus insects and diseases by spraying. The five applications (Nos. 3, 4, 7, 8 and 9) are recommended as sufficient for the control of the enemies usually destructive on grapefruit in an average season, provided the spraying is done thoroughly. Oranges will ordinarily require only three applications (Nos. 7, 8 and 9). Under conditions usually favorable for disease or insect increase certain or all of the remaining applications will also be required.

The scab applications indicated for grapefruit may also be required on highly susceptible varieties of oranges of the kid glove type.

Application number 3 will be required on oranges only when thrips are abundant.

Be cautious about using lime-sulphur solution when the temperature is above 90 F. If applied under this condition, use the weaker strength and be sure of the accuracy of the Baume test and diluting.

Bordeaux mixture requires 3 pounds of bluestone and 3 pounds of lime in 50 gallons of water. Get the best grade of fresh stone lime obtainable. Never use air slacked lime. If hydrated lime or an inferior grade of quick lime must be used, make it four pounds.

NO.	FRUIT	ENEMY	MATERIALS	TIME OF APPLICATION	REMARKS
1	Grapefruit	Scab	Bordeaux Mixture 3-3-50	JUST BEFORE THE FIRST FLUSH OF GROWTH.	Apply if scab is abundant on old leaves. When Bordeaux Mixture is used it must be followed by two of the specified lime sulphur applications within two months to reduce scale insects.
2	Grapefruit	Scab Rust Mites Red Spiders	Lime Sulphur Solution, 32° Baume; 2½ gal. in 100 gallons.	JUST BEFORE THE PETALS OPEN.	To be applied if scab infections appear on the new growth, or if rainy weather favorable for the scab follows the first application.
3	Grapefruit and Oranges	Scab, Thrips Rust Mites Red Spiders	Lime Sulphur Solution, 2 1-2 gal. to 100 gal. plus 13 oz Nicotine sul- phate to 100 gal. of the spray solu- tion.	WHEN 1-3 TO 1-2 THE PETALS OPEN.	Add the nicotine if 25 or more thrips per bloom are present.
4	Grapefruit	Scab, Thrips Rust Mites Red Spiders	Lime Sulphur Solution 2½ gal. in 100 gallons	7 TO 10 DAYS AFTER 1-3 TO 1-2 THE PETALS ARE OFF.	
5	Grapefruit	Scab, Scale Rust Mites Crawlers	Lime Sulphur Solution 2½ gal. in 100 gallons	14 TO 20 DAYS AFTER 1-3 TO 1-2 THE PETALS ARE OFF.	To be given if rainy weather favorable for scab infection follows the fourth application.
6	Grapefruit	Rust Mites Tearstain	Lime Sulphur Solution 2 gal. in 100 to 1½ gal. in 100 gallons.	APRIL 5th TO 15th.	If any two out of Nos. 3, 4, and 5 have been given, this can be omitted; otherwise this is the critical spraying for rust mite on grapefruit.
7	Grapefruit and Oranges	White Fly Scale Insects Rust Mites	Oil emulsion 1 percent plus dry soda sulphur 2½ lbs. in 100 gallons.	IN MAY WHEN THE FRUIT IS AT LEAST 1 INCH IN DIAMETER.	The oil emulsion should be used so that the diluted spray material should contain 1 percent of oil, that is, if the emulsion contains 66 percent of oil, 1½ gallons would be required for 100 gallons of water.
8	Grapefruit and Oranges	Tearstain Rust Mites	Lime Sulphur Solution 2 gal. in 100 to 1½ gal. in 100 gallons.	IN JUNE.	On oranges this is the critical rust mite spray, if the fruit has not received any previous lime sulphur applications.
9	Grapefruit and Oranges	White Fly Scale Insects	Oil emulsion 1 percent.	PROBABLY IN SEPT. or OCT., BUT CERTAIN- LY BEFORE FEB. 1st.	To be given if scale insects or mite fly are noticeable.
10	Grapefruit and Oranges	Rust Mites	Lime Sulphur Solution 2 gal. in 100 to 1½ gal. in 100 gallons.	NOVEMBER to JANUARY	To be given only if rust mites are noticeable.

Need of Care to Prevent Blue Mold Decay in Transit

By H. J. Ramsey, Field Manager California Growers' Exchange

There is no other factor that will so greatly influence the returns of our growers and our associations as that of decay. We cannot urge too strongly the necessity of taking every precaution to prevent decay; both in transit and after arrival on the market. During the past few weeks many shipments from Southern California have shown decay of from 5 to 15 per cent, meaning actual losses to the shippers of from 50 cents to \$1.50 per box. With our present costs of production, packing and transportation, losses of from 50 cents to \$1.50 a box oftentimes mean that our shipments will not bring more than handling and transportation charges, in fact, frequently less. Under these conditions it is absolutely essential that each and every shipper analyze thoroughly his local problem with a view of reducing to a minimum the decay in transit.

The decay which has been reported to date has all of it been Blue Mold Decay, due to injury of some kind, either mechanical injuries made in preparing the fruit for shipment, or worm injuries, of which we have more than our share in some districts.

Field Handling

As reported in our last circular of the 29th ultimo, a survey of handling conditions by our field inspectors (the data based on inspection of the work of 30 associations and 77 crews) showed that we are getting, on the average, defective picking to the extent of 8.8 per cent; 5.8 per cent of this defective picking is directly chargeable to long and slanting stems; 1.6 per cent to clipper cuts, and the remainder, 1.4 per cent, to miscellaneous injury such as gravel, twigs, etc. In this connection we want to again emphasize the necessity of certain fundamentals in securing proper field handling and of making possible the delivery of the fruit to the packing house in good, sound condition.

Supervision

Proper supervision and inspection of the picking is necessary on the part of each crew of each association. The supervision is obviously up to the foreman of the gang, and the character of work obtained is fundamentally dependent upon the

foreman's ability to handle men, his realization of what careful handling means and the most careful attention on his part to every detail of handling. The inspection can be, and is, handled in various ways, often times by the foreman of the gang. He, however, has so many other duties to perform that it is often impossible for him to inspect the work as carefully as he should. The inspection of the picking in many associations, therefore, is lodged in one man, a picking inspector, who has nothing else to do but thoroughly inspect the picking of each man in each crew. Where the right kind of a man is obtained for this work he can render the association invaluable service through careful inspection of the work of each picker and by working with the pickers, bring their work in each instance up to a satisfactory standard. Under present labor conditions, if certain pickers do not show either ability or inclination to bring their work up to standard, such men may very profitably be eliminated. In some districts the district exchanges employ the inspector, who inspects the picking of each crew in each association. This has worked very well, particularly in districts where the territory is not too large and where they have been fortunate enough to get the right kind of a man as inspector.

Clippers

Aside from the care exercised by the pickers to avoid mechanical injury, the condition of the clippers has a good deal to do with the kind of work obtained. In the first place the pickers should be supplied with the kind of clippers that have been demonstrated to give the most satisfactory results; that is, clippers that are fool proof, to the extent that this is possible. The foreman should at all times see that the clippers are in A-1 condition, and that poor clipping is not the result of defective or poorly adjusted tools.

Picking Boxes

The closest attention should be given to keeping all picking boxes in thorough repair. Many of the picking boxes, especially the older ones, are more or less broken, have many splinters and protruding nails which cause considerable mechanical

injury and consequent decay. Care should also be taken that they are not so full that when loaded on the wagons or trucks the weight of the boxes will rest on the fruit instead of on the ends of each box as they should. Many field boxes are made of shook full of knots. As these knots fall out, jagged sharp points are left, which cause much injury. Every association can well afford to throw these out for repair.

Injuries in the Packing House

Whenever the machinery is not in use, the equipment should be gone over thoroughly with a view to seeing that it is in first-class condition. In a number of cases thorough examination of the machinery has revealed the fact that much mechanical injury has resulted from protruding nails or splinters that would not ordinarily be observed unless the machinery is carefully gone over from time to time.

Packing

Both graders and packers, of course, should be provided with gloves, in order to prevent finger nail injury. In unpacking a number of boxes lately, we have found, particularly where very high packs are being put out and due care is not exercised at the press, a number of oranges are injured when the covers are being put on. In some cases we have found as many as eight oranges with the skin broken in one box of the 200 size.

Worm Injury

In certain districts much of our fruit is coming in showing considerable worm injury. The result of this type of injury is reflected very clearly in the decay reported in cars shipped from these districts. While we realize that it is extremely difficult to eliminate all of this in grading, every precaution should be taken by putting on extra graders to eliminate the worm-injured fruit. While it adds somewhat to the cost of handling, certainly a few extra graders will not cost anywhere near as much as a loss of \$1 or more per box on shipments of fruit where worm injury is prevalent. Many of our houses are putting on sometimes as many as three times the number of graders usually required, and if by so doing they can catch most of the worm-

injured fruit, it will more than repay the shipper.

In some districts the fruit shows decay on the trees as a result of worm injury. This decayed fruit is picked with the sound. Oftentimes a field box of fruit will have as much as a half dozen decayed oranges. Unless this decayed fruit is picked out at the dump, the entire machinery (brushes, dryers, etc.) will become thoroughly infected and every injured orange will almost certainly decay. These decayed oranges must be culled out before they go through the machinery, otherwise serious decay is a certainty in all lots of fruit run through it.

Soft Creased Fruit

In some districts we are getting decay because of soft and creased fruit. Many lots have been observed where the fruit is so soft and creased that the packing of it without splitting and breaking is an impossibility. Every precaution must be taken to cull this out of the fruit being packed for shipment.

Brown Rot

Following the recent rains more or less brown rot is showing up in different districts. The fungus which causes the brown rot is extremely contagious, spreading rapidly by contact to adjoining fruit in the packed boxes. The wash water, however, is the most prolific source of infection, unless bluestone or some other disinfectant is used. To prevent infection of sound, unaffected fruit, bluestone should be used in the wash water in the soaking tanks in the following proportions: 1½ pounds or 24 ounces to each 1,000 gallons of water in the morning; following this with 16 ounces to each 1,000 gallons of water again at the beginning of the afternoon run, where the washing operation has been fairly continuous since morning.

The most convenient method of handling the bluestone is to place the bluestone crystals in a burlap sack, at or near the top of a barrel filled with a known quantity of water. If the solution is made up in the proportion of one pound or two pounds to each gallon of water, the required quantity for a tank of any capacity can be easily figured out. Never put the crystals directly into the soaking tank.

For Lemon Shippers

We have a record showing the quality of picking performed by the different lemon shippers and associations during the period covering ap-

proximately the last three and one-half months, developed through careful inspection by members of the field repartment. The period covered is somewhat longer than is usually the case in statements of this kind. Owing, however, to market and other conditions, the pickings were not as regular or frequent as is usually the case at this time of the year. The data presented, therefore, may cover several inspections of individual associations, especially in cases where the picking was carried on with much the usual regularity. The data indicate fairly accurately the quality of work performed during this period, and show that our shippers generally appreciated the fact that careful handling and sound fruit was fully as important, and even more so, than under ordinary conditions.

The picking inspections cover 45 houses; the average of defective picking is 4.2 per cent, divided as follows:

	Per cent
Long Stems	2.9
Clipper Cuts7
Green Pulled6
Total	4.2

As a matter of comparison, it is worthy of note that during the period, December 29, 1919, to January 24, 1920, there were 13 associations that had a record of less than 1 per cent defective picking. During the period covered in this last statement, we have eight associations under 1 per cent.

For the same period a year ago, there were 32 associations out of 50 inspected which had defective picking of less than 3 per cent. During the period last covered we have 19 out of 45 with defective picking less than 3 per cent.

In other words, the statement of one year ago showed 26 per cent of our lemon shippers with defective picking under 1 per cent, and 64 per cent with defective picking less than 3 per cent. The inspection data show for this last period 17.7 per cent of our lemon shippers with defective picking less than 1 per cent, and 42.2 per cent with defective picking less than 3 per cent.

While the picking as a whole is not as good as it was a year ago, it demonstrates that it has been possible, under the conditions that have existed, to secure almost perfect picking where the work has been carefully and properly supervised.

SOUTH AFRICAN PACKER ADOPTS CALIFORNIA HOUSE PLANS

Numerous inquiries are received from South Africa, relating to the growing and packing of citrus fruits. That it promises to become an important citrus fruit growing section is shown by the evident purpose of the growers in South Africa to adopt the best that America has to offer in methods of culture and shipment.

Last fall, drawings to show the proper arrangement of an up-to-date orange packing house were prepared for H. E. V. Pickstone, a prominent grower of South Africa, by W. P. Shepherd of Pasadena, and word has been received from Mr. Pickstone that he is planning to erect a new packing house in accordance with these plans. He also states that a number of other houses will probably be erected in the near future.

FOOTHILLS GROVES, INC., ADD- ING TO ITS PACKING HOUSE

The Foothills Groves, Inc., of Yorba Linda, Calif., which is associated with the Mutual Orange Distributors, is making an addition to its packing plant, designed to give more storage room for lemons and also to accommodate a complete unit of up-to-date orange packing equipment, with a capacity of two cars a day.

The addition is 75 by 106 feet in size, and is of a permanent type of construction, having reinforced concrete and tile walls and a steel-trussed roof with "saw-tooth" sash facing the north.

NEW MARKETING ORGANIZATION

The marketing problems of the fruit and vegetable growers have been recognized by the Illinois Agricultural association—the farmers' business organization of that state, composed of 88 farm bureaus and 106,000 members—and along with grain, livestock and dairy products marketing departments, a fruit and vegetable marketing department has been established. The office is at 130 North Wells street, Chicago, with C. E. Durst as director.

FORMER CITRUS MAN MADE MANAGER OF ALFALA GROWERS

F. A. Little, for many years manager of the fruit and land departments of the Arlington Heights Fruit company, Arlington, Cal., has been chosen as the new general manager of the Alfalfa Growers of California, Inc., at the annual meeting of the organization recently held.

New Steamship Service to the Far East to Carry Pacific Coast Fruits

Vast opportunity for Pacific coast orchardists, vineyardists and ranchers, for the disposal of any surplus production, in the markets of the Far East, has been afforded by the installation of a line of fast, modern, combination freight and passenger carriers, to be operated from San Francisco to Manila and East Indies by the Pacific Mail Steamship company. The highly improved service is initiated by the shipping board steamers "Creole State" and "Wolverine State," these vessels having arrived at Pacific ports from the Atlantic in January and February.

The announcement is of special interest to the farmers of the Pacific coast, because the ships were, at the suggestions of the Pacific Mail Steamship company, particularly designed to care for the transportation of the ranch production of the Pacific slope, and marks the beginning of a service which provides the necessary refrigerating space for commodities that could not be otherwise sent out of the United States. The ships will be operated in the famous Manila-East India service which was established by the Pacific Mail Steamship company.

Designers of the fast combination freight and passenger vessels have given special attention to cargo space for refrigerated fruits from the vast orchards of California that the demands of merchants in Manila, Saigon, Singapore, Calcutta and Colombo may be met. It has long been the desire of the Far East to enjoy California's wonderful fruits, and now the dream has come true—1,200 tons of refrigerated space for orchard products is available in both the S. S. "Creole State" and the "Wolverine State."

Best of care has been taken for the handling of California fruits to be shipped in the new vessels, as each refrigerated cargo space is equipped with two special hatches 8 feet by 15 feet, and each hatch is served by a special boom and winch. Such arrangement assures careful stowage—and coupled with the complete iced compartments and complete refrigerating plant, will bring about the receipt of fruit shipments in fresh condition at all ports of call along the popular Manila-East India line.

The S. S. "Creole State" sailed for San Francisco from Baltimore on December 27. Arriving at San Francisco on January 15, she loaded car-

go, and on February 3 was dispatched on the Pacific Mail's direct express communication with the Philippines and India. The S. S. "Wolverine State" sailed from San Francisco on February 25.

Direct express communication to Manila will be made by the new liners in 22 days. The time from Calcutta will be 34 days, the "Creole State" and "Wolverine State" making the fastest time in history of Pacific trade with the Far East. Leaving San Francisco the ships will reach Honolulu on the afternoon of the sixth day; the Philippines in 22 calendar days, and arrive at San Francisco in 20 calendar days; Singapore will be reached in 28 calendar days from California; Colombo in 34 days; Calcutta in 39 days; and will make San Francisco, homebound, in 34 days from India. Sailings will be maintained every 30 days from San Francisco, excepting when Sunday interferes, when sailings will be on the Saturday preceding.

Importance of the Pacific Mail Steamship company's Manila-East India service is clearly demonstrated in the assignment of the wonderful new liners. Developed by the Pacific Mail, and inaugurated in August, 1917, it has long been recognized that more speedy vessels were needed on the run to the Philippines and India, because of the vast trading opportunities opened by the company during the world war.

Action of the United States government in assigning these new "502" type vessels to the Pacific Mail is particularly significant, for it is the answer to the indication of section seven of the merchant marine act of 1920, in that it is a move in support of steamship lines aiming to improve the trade facilities between the United States and foreign countries and to provide adequate postal service.

Now that the well-known fruits of California can be shipped to the Far Eastern markets, it is interesting to note the opinion of officials and the press of India regarding the urgent call for orchard products of the Golden State. From the Statesman, a leading paper of Calcutta, we reprint an expression of gratitude to the Pacific Mail Steamship company for sample baskets of fruit recently distributed in that territory:

"The possibility that the people of Calcutta may be supplied with deli-

cious fruits from California is suggested by baskets of oranges and apples sent to this office by the Augus company, Ltd., the agents of the Pacific Mail Steamship company.

"The baskets prove that the fruit can be brought in excellent condition, and since there are seasons when there is little fruit to be had in India—when we are, so to speak, between the mango and the orange—it is hoped that California will come to our rescue."

Sample baskets of oranges and apples also were sent to the deputy governor-general of Indo-China, the governor of Cochín-China and the general agent of the Compagnie de Chargeurs Reunis, an important French steamship line. In response to the "Taste of California," notes of gratitude highly complimentary in thanks, were sent to the officials of the Pacific Mail Steamship company, proving that the now afforded refrigerated fruit cargo space on the "Creole State" and "Wolverine State" are most welcome all along "the road to Mandalay."

LEMON DEMAND GOOD

There is a good demand for lemons at fair delivered prices compared with previous years, but on account of the high freight rate the f. o. b. returns have been below the cost of production.

The market at present is well supplied, with prices declining on account of the volume of fruit being shipped, which exceeds by a considerable quantity the average of previous years. There is an increased supply of foreign lemons afloat, a total of four cargoes being reported en route to American ports, but the definite quantity of the cargoes is unknown.

FOURTH OF ITALIAN LEMONS GO INTO BY-PRODUCTS

That Italian growers devote more of their lemon crop to by-products than do American growers is shown by recent federal commerce reports, which state that one-fourth of the Italian lemon crop goes into the making of citrate of lime, concentrated lemon juice and citric acid. The Camera Agrumaria bought and resold all the citrate of lime produced, maintaining the market. There are two factories manufacturing citric acid—one in Casle, northern Italy, and the other in Palermo.

New Building Design for Citrus Packing Houses

Gravity Method Said to Greatly Reduce Cost of Construction, Equipment and Operation.

A new design in packing house construction and arrangement of equipment, which has just been worked out by the firm of Brogden, Ricketts & Haworth, Tampa building engineers and construction managers, is attracting much attention among citrus men. Demonstrations of a new sizer invented by Mr. Brogden and the submission of new building designs worked out by him have led some prominent citrus men to declare that his designs will work a revolution in this branch of the industry.

During the last year this firm has erected a number of modern concrete packing houses in South Florida. Owing to the peculiar demands made upon buildings of this character, the great strength required to sustain the heavy weight put upon the foundations and floors, and the vast floor space required to accommodate the bulky equipment, this class of construction has been perhaps the most costly of any type of building known, based upon cost per square foot.

This fact led Mr. Brogden into investigations and experiments with a view to determining if alterations could not be made which would reduce the cost of construction without impairing the efficiency of operation. The extensive machinery equipment required and the heavy motor equipment necessary to drive this machinery, seemed to him to be responsible for the expensive type of construction required for packing plants.

To reduce the number of machines and eliminate what appeared to him to be unnecessary waste of space, was his first problem. To solve this was his first task.

The number of sizers required in the operation of the ordinary packing plant seemed to offer the greatest hindrance to a successful solution, and for this reason Mr. Brogden first sought to remedy this by the construction of a sizer which would have greater capacity and require less room than those commonly in use. In this effort he was entirely successful, having constructed a gravity sizer of compact form yet of great capacity, which apparently fills

every requirement of the trade.

However, having demonstrated the efficiency of his invention, Mr. Brogden discovered that by making a very slight change in sizers of the accepted type, he can secure the same degree of efficiency from them as from his own invention, thus eliminating the cost of new equipment where prospective packing house builders already are supplied with other sizers.

Having solved the sizer problem, Mr. Brogden next applied himself to the solution of the problem of distribution. This he found to be a comparatively easy matter, and one which was soon disposed of.

Demonstrations of the new sizer at Mr. Brogden's home on South Delaware street, in Tampa, together with blueprint designs of the proposed construction and arrangement of the newly designed buildings, seem to bear out the claim of economy in construction, equipment and operation made by Mr. Brogden and his associates.

Among the claims made for the new design of packing plants are the following: A saving of at least 25 per cent in the original cost of construction; a saving of approximately \$8,000 in the cost of equipment for a two-unit plant; the elimination of two-thirds of the sizers now required; in other words, the operation of a two-unit plant now requiring six standard sizers with two sizers of the same size and type; a reduction in the number of nailing presses; the elimination of all carrier box conveyors, including automatic throw-outs; a reduction in the number and size of motors; the elimination of all line shafting and belts, and a general economy of space, construction cost and operation.

One of the greatest claims for the new system is the gravity distribution by which the fruit is handled from the time it leaves the truck at the packing house door until it is packed in the boxes ready for delivery to the freight car at the door.

Another feature, and one which is of greatest moment to the packer, is the provision of extra bins for the reception of fruit of those sizes which commonly over-run. Where

fruit of a certain size largely predominates, under the present system, no provision is made for relieving the over-burdened bin, and the sizers must be stopped until the workers at the congested point have been able to "catch up." Under the new system, by merely throwing in a switch, the fruit from the over-burdened bin can be shunted along to an extra bin further down the line and no cessation of labor or stoppage of machinery is necessary.

The new design of construction, equipment and operation is equally successful in the handling of grapefruit, oranges or tangerines. When applied to sizers of any of the standard makes now in use, tangerines may be handled as successfully and as easily as oranges or grapefruit, and the sizers may be so regulated as to "size" the fruit much more closely than at present, where a packer is especially desirous of securing a perfectly even pack for the fancy trade.

The only objection raised against the gravity system, where it has been in vogue, has been the liability of fruit to clog in the troughs carrying it to the bins. This objection was due to the fact that the troughs were flat bottomed with upright sides, which permitted the fruit to jam. In the design provided by Mr. Brogden, the troughs are rounded like an open eave-trough of metal and provides an absolute insurance against the possibility of clogging, jamming or blocking of the fruit.

In a one-unit plant, it is claimed that one sizer is all that will be needed, as it will handle all the fruit, four grades of nine sizes to each grade, that the other equipment of such a plant is capable of caring for.

In speaking of the money saving which this new system would mean to citrus growers, Mr. Brogden said: "Our firm now is supplying estimates on twenty-three packing houses. Under the new design, we can safely figure on an average saving of \$20,000 in the construction cost of each plant. Add to this approximately \$8,000 in the cost of equipment, and we have a total of \$644,000 saved to the owners in first cost. Packers

(Continued on Page 20)

Survey of National Conditions Shows Increasing Confidence

David F. Houston Says Business Feels Worst Has Passed

David F. Houston, commenting on the Second Survey of National Conditions just completed by the Fidelity and Deposit company, said:

"The survey indicates that the business world is still feeling its way, but with increasing confidence and with the conviction that the worst has passed. The country has successfully borne the strain caused by a most notable drop in prices, particularly of a vast volume of raw materials, and has weathered a trying period of liquidation.

"The demand for finished products has not developed to the point where our factories feel justified in taking the requisite quantity of our surplus raw materials to furnish the necessary relief to their producers; but there are some indications of a change in this direction. Business men realize that forced action based on artificial optimism may lead to unwise action and produce further embarrassment. The foreign situation has not shown the expected improvement, and continued difficulties are experienced in discovering an effective European market for our commodities.

"This survey does point to certain favorable domestic conditions. The cost of living has appreciably diminished. Building operations in a number of districts tend to increase. There have recently been no strikes of consequence. Greater productivity of labor per man is reported from all districts.

Raw Materials Plentiful

"Raw materials are plentiful, and physical transportation conditions are good. There have been no business failures of moment. The crop outlook is satisfactory; and the banking situation has improved. It is believed that confidence in business circles is slowly spreading and that while there is resistancy the business men of the country are feeling their way with sound business caution, and the country is working back toward a more stable condition.

"In undertaking to give business men a comprehensive and timely picture of national conditions and public opinion, the Fidelity and Deposit company has once again performed a distinct public service.

"What the survey discloses should

be an encouragement to us all to go forward with confidence, though not with recklessness."

More than one thousand representatives of the Fidelity and Deposit company gathered the information contained in the survey. They obtained from bankers, manufacturers, business men and others, answers to a questionnaire covering economic, agricultural, industrial and general conditions. The replies were telegraphed to Baltimore, where they were analyzed and tabulated. The review was made in the same fashion as the company's first survey, published last September.

In preparing the questionnaire, economists, lawyers and many men in public life were consulted to make it as complete and comprehensive as possible. Among those who suggested questions were: Attorney-General Harry M. Daugherty, Senator Reed Smoot, Secretary of Agriculture Henry C. Wallace, his predecessor, E. T. Meredith, and Albert B. Fall, secretary of the interior.

Mr. Houston's Comment

Mr. Houston, formerly secretary of agriculture, and more recently secretary of the treasury, made his comment after a careful study of the survey chart prepared from the telegraphic replies. His statement in part follows:

"This survey is suggestive, and will be helpful. At all times information of the sort here gathered is valuable. It is particularly so now when there is still uncertainty in the business world, and leaders are debating the details of their industrial programs and policies.

"While the survey shows that no section of the country reports a marked increase in industrial activity, and that manufacturers, distributors and consumers still are proceeding on a short-time basis, this does not mean that the general industrial situation has not improved. The country is better off today than it was three months ago, and manufacturers in growing numbers are planning definite production schedules.

"But the public is still restricting its buying, and probably will continue to purchase cautiously until retail price reductions become more nearly equal to the reduction in

manufacturers' and wholesalers prices. The maintenance by retailers of a relatively high price level has been perhaps the chief stumbling block to quickened industrial activity.

Tendency to Go Forward

"The attitude of the public has prevented retailers from stocking up for spring business; but as retailers more generally reduce their prices, consumers will come more heavily into the market, larger orders will result and manufacturers can plan production schedules with reasonable assurance that prices will not fall lower. It is apparent that we are approaching the point where many manufacturers can get materials at prices they can afford to pay and, with lower wages and more efficient labor, they can furnish goods at a cost within the consumer's reach. Meanwhile producers, distributors and consumers are operating for immediate needs, with a tendency to take larger chances and to go forward.

"An appreciable reduction in wages is noted in every section and in virtually every kind of industry. The fact that savings accounts have increased in the industrial sections, however, would seem to indicate that in such districts wage and salary reductions have not been as great as the reductions in the prices of commodities, and that therefore, fortunately, the decrease in wages has not necessitated a lowering of the standard of living.

"Except in New England and the Rocky mountain states building operations are increasing. This increase, however, is nowhere sufficient to meet the demand, and in every part of the country there is a need for low-priced dwellings. But sentiment is not favorable to building at present prices, and until costs fall to materially lower levels, the unfavorable attitude toward building operations on a wider scale will continue.

Credit Situation Better

"The credit situation is improved. Interest rates range from 6 to 8 per cent for the country as a whole, but banking funds are reported available by every section except the South and Rocky mountain regions. It should

be noted in this connection that federal reserve banks in the South and West have practically ceased rediscounting with banks in the northeast. Corporate balances everywhere are reported to have decreased, and this is one of the unfavorable aspects of the present situation. Yet it can be partly explained by the fact that the growing purchasing power of the dollar permits a reduction in the size of such accounts.

"The crop outlook is stated to be good everywhere. Except in the central west and on the Pacific coast, farmers are reported to be reducing their acreage. But this must be taken with reservations. Such statements are always common at this time and frequently turn out to be incorrect. It may be, too, that in certain areas farmers are shifting their operations and working back to a more balanced agriculture.

"The reports from some agricultural sections of farm labor shortage also may need interpretation. In not a few cases a report of a shortage may mean that the employers cannot get labor at their own price; and it is significant that outside of the farming communities in the industrial sections, the reasons assigned for the reported acreage reductions are low prices of farm products, rather than shortage of money.

"A demand for farmers by renters is observed in Illinois, Kansas, Missouri and Nebraska, and in the South Atlantic and Pacific states. Western and southern farmers are reported to be withholding payment of bills and the condition of the cattle and sheep raisers in Kansas, Nebraska and the Rocky mountain districts, where there is a congestion in wool, is reported to be poor.

"Nowhere is there a noticeable movement of men to the farms from the industrial centers. But this is not abnormal or necessarily undesirable. After all, farming must pay, and in the long run there will be as many engaged in farming as will produce the commodities which the consuming public will buy at a profitable price.

"The housing shortage leads as the most important local question in the hundreds of communities covered by the Fidelity and Deposit company's reports. Unemployment is second and taxation third. Sections which report a noticeable increase in crime since last September are the middle west, Rocky mountain and Pacific coast states.

Taxation Big Question

"The big national question, ac-

cording to the survey, is taxation, with peace settlement and international trade conditions next. Taxation is uppermost in the mind of the average man. The country is opposed to the present tax system, and is becoming increasingly impatient for change.

"In its reflection of the attitude of business men generally toward the highly technical questions of tariff and other forms of raising revenue, the survey has perhaps its greatest significance to me. It indicates that as a whole we are talking of legislative and other means of stimulating the return to normal conditions without clearly understanding the fundamental economic questions involved—without accurately defining the terms used. It may be doubted whether those who answered the questions concerning tariff and domestic taxation had an opportunity to give the subjects the requisite investigation and consideration.

"According to the survey many business men and the western farming interests desire a higher tariff on European commodities. Yet it is difficult to see how, now that we have a large surplus to export and are seeking foreign markets—now that Europe is indebted to us for large and increasing sums—this nation can profit from a higher tariff or desire it; especially when its chief competitor, Europe, is sadly stricken and will take years to recover.

"In the field of domestic taxation, the survey reports that the country is unanimously in favor of the repeal of the excess profits tax. This tax should be repealed. It is difficult of administration; it is cluttering up the administration of the government's tax laws; it does not work equitably as among businesses; and its yield is decreasing.

Survey Favors Sales Tax

"Obviously, a sales tax, reported by the survey to be universally recommended, would be no substitute for an excess profits tax. The excess profits tax falls on corporations. The sales tax would, without much question, be paid by consumers. If it is proposed to abolish all profits taxes, and to raise the revenue needed through sales taxes, then we would run into this equally great difficulty, that whereas now about 21 per cent of our federal taxes are consumption taxes, then perhaps 50 per cent would be consumption taxes. No student of taxation could or would defend making consumption the basis for such a percentage of our federal revenues.

"It is astonishing that there should have been a unanimous expression in this survey in favor of a rebate on the federal income and other taxes. I do not believe that any authority on taxation or public finance would for a moment countenance this proposition. The relief sought can and should be secured along the lines of economy in expenditure, and reform of taxation under the most expert guidance that can be obtained, coupled with a genuine and thorough-going budget system."

WILL HANDLE FREIGHT CLAIMS

A new firm has been organized on the Detroit market for the handling of freight claims. This firm, which will work exclusively on fruit and produce claims, both over-charge and loss and damage, is composed of Louis Nolan and O. T. Cummings and will handle the business of practically all produce concerns in Detroit. An organization has been perfected to handle not only the Detroit business but also claims for both shippers and receivers in any part of the country. The new firm will be known as Nolan and Cummings, traffic managers.

Mr. Nolan has had a wide experience in railroad work and is well known in Detroit and throughout Michigan and Ohio as a specialist in overcharge claims. He has seen service with the C. R. I. & P. at Chicago, with the Ann Arbor at Toledo, having been connected with the Freight Claim Department of the road. He has also been with the New York Central, Pere Marquette and Michigan Central and on account of this experience is exceptionally qualified to handle work of this nature.

Mr. Cummings has had a phenomenal record in the handling of loss and damage claims, having been connected with the Pennsylvania System at Pittsburg for eight years, leaving them in 1915 to become Traffic Manager for Andrews Brothers company, Fresno, California. Until the organization of the new firm, which commenced business on January 17th, he has had charge of the loss and damage department for Andrews Brothers company at Detroit.

The clientele of the Shippers' Freight Rate association will be taken over, the work of the association having been absorbed by the new concern. Offices have been opened on the east arcade of the New Andrews building at 1708 West Jefferson avenue, Detroit.

NEW BUILDING DESIGN FOR CITRUS PACKING PLANTS

(Continued from Page 17)

who have examined our designs tell me that they can easily figure on a saving of 10 per cent in the cost of operation. If this is true, the adoption of this new design of building for packing plants, should easily mean a saving of \$1,000,000 to the citrus industry of the state during the first year."

Mr. Brogden is confident that many of the associations and individuals now contemplating the construction of packing plants will adopt the designs worked out by himself and his associates.

ANOTHER THEORY ON BLUE MOLD

Umatilla, Fla., Mar. 28, 1921.

Mr. S. L. Frisbie,

Dear Sir:—I have just read the March copy of your "Citrus Industry," and was especially interested in the article on the "decay of fruit in transit."

Now I have been shipping citrus fruit for 20 years, and most of the time in barrels, and sugar barrels at that, and yet had no trouble with my fruit—such as has been the common complaint for the last 10 years, or since the packers commenced using so much paper and the bulge pack. And yet these two things are not mentioned in that article, although finger nails, splinters, dropping from the bag into the box, etc., etc. are all mentioned.

Many times when the pressure is put on the bulge pack the juice is seen to run out from the bottom of the box. The box is packed one layer higher than the top of the box, and then mashed down till nailed at the ends. Now, of course the paper absorbs most of that juice and all the sweat that often takes place in the packinghouse after packing. I have picked my fruit in bright, shiny weather and put in the packinghouse and next day when I started to pack, have found it (many times) so wet that I would not pack. Now suppose I had wrapped the fruit in paper before that sweat took place, what do you suppose would happen to it before it got to market? What else but blue mold?

I shipped to my brother in North Carolina in sugar barrels and he told me to leave out the paper for if there was any rot in the barrel it would be when I used paper. When I did not use paper the sweat would run down to the bottom of the barrel or box and run out the holes made for that

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purpose. That paper is a heavy and useless expense and lots of the fruit wont stand the pressure put upon it in nailing down the top of the box. Retailers have told me that they had to get the paper off as soon as they got the fruit because of the mold under it.

Yours truly,

W. A. WHITCOMB.

OUT OUT THE GUMMOSIS

By H. E. Stevens, County Agent Lee County

Gummosis is one of the troublesome citrus diseases prevalent in Florida. It is rather slow in development, but very persistent when started. Gummosis is a bark disease which attacks the trunks and larger branches, but not the leaves or fruit. The disease is easily recognized by the scaly, ulcerated, gumming areas in the bark. These occur in irregular patches, the dead surface bark scales up in flakes and falls away, leaving a brownish, roughened scar. In its early stages, it appears as small cracks in the bark, often oozing gum.

Cut out the diseased areas, removing the affected bark down to the healthy wood, then cover the wound with some antiseptic where the disease has girdled the trunk or limbs, very little can be done to save the affected parts.

Apply to the wounds: Avenarius carbolineum, either half or full strength; pine tar; bordeaux paste; a good white lead paint or lime and sulphur paste. The lime and sulphur paste or wash is the cheapest, easiest prepared and gives good results. It is made by mixing equal parts of powdered sulphur (flowers of sulphur) and air-slaked lime with water to make a thin paste or wash that can be easily applied with a brush. The wounds and entire trunk of affected trees should be painted once or twice a year.

FAVORS STATE LAWS

TO CHECK SALE OF FRUIT

JUICE SUBSTITUTES

A Los Angeles business man, who happens to be a lemon grower as well, strongly urges that a concerted effort should be made to secure the passage of laws by states to forbid the sale of synthetic preparations as substitutes for real fruit juices.

He states that on several occasions he has been offered such substitutes, but has always declined to accept them. Children, he argues, probably would accept whatever the dispenser proffers and would get a chemical drink instead of a pure fruit juice one.

State legislation is preferable, this

grower believes, to a national enactment, as the dispenser would then come directly within the provisions of the laws of his own state, the national restrictions being limited to matters sold through interstate commerce.

The law proposed by this man would make it a misdemeanor to offer a synthetically prepared drink when "lemonade" was asked for by the customer.

GETTING RID OF THE

ARGENTINE ANT

The United States Department of Agriculture says, referring to the Argentine ant.

"In scattered localities, the Argentine ant, in dark-brown hordes, attacks gardens, ruins orchard and truck crops, and even swarms into the houses, making conditions in some cases so unbearable that their inhabitants leave.

"The nurseryman, the trucker, and the orange grower are greatly molested by this pest, owing to the fondness of the ant for the honeydew excreted by aphids and scale insects. The worker ants take the best possible care of these honeydew-yielding species, and protect them from their natural enemies. They frequently build shelters over them, and as the host plants grow carry the young scales and aphids and place them on the young tender growth, where they may more easily sap the juices of the plants.

"Farmers' Bulletin No. 1101, The Argentine Ant as a Household Pest, issued by the department of agriculture, gives methods of control which entomologists in the department have found effective. For keeping ants from the trees the following remedy is suggested:

"Mix together thoroughly with a wooden paddle the following ingredients until of a uniform color and consistency: Finely powdered flowers of sulphur, part by weight, 1; commercial treebanding sticky mixture, parts by weight, 6.

"The tree trunk should first be coated with melted paraffin, which will harden almost immediately. The mixture just referred to should be applied then over the paraffin in a band about five inches wide and about one-quarter inch thick.

"Before the band is applied the tree should be pruned so that the lowest branch is fully a foot above the ground and all rubbish should be removed from beneath the tree and the soil cultivated to destroy all grass and weeds."

SOME ADVANTAGES OF THE FLORIDA SYSTEM OF NURSERY INSPECTION

(Continued from Page 12)

ber of very serious pests into the country.

Second: There is opposition on the part of some Florida nurserymen. At first there was a great deal, but most of the nurseries that were afraid of the new requirements have changed their views and are now outspoken in their support. In one section of the state, however, an organized propaganda has been conducted by a few nurserymen ever since the reorganization of the department. Scaly bark occurs quite generally in that section, so that the regular scaly bark tags are issued to all local nurserymen. Advantage of this fact has been taken by the few disgruntled nurserymen there to prejudice the general public in that section against the work of the State Plant Board. They try to make it appear that that section of the state is being discriminated against and have by constant talk created quite a little adverse public sentiment in that particular portion of the state. It is quite clear that this is due to propaganda pure and simple, because nurserymen and growers in other scaly bark sections do not feel the same way, though under identical restrictions. It is significant to note that one of the leaders of this opposition violated the nursery inspection requirements repeatedly before the reorganization and has at least attempted to do it since, and that another one has violated the inspection law or rules repeatedly since the reorganization. As indicated, however, this opposition is purely local.

Third: Many good ladies, and others who are uninformed concerning the need for more careful regulation of nursery shipments are prejudiced against the new system of nursery inspection by letters and notices (propaganda) sent out by nurserymen of the North. A few minutes' talk by one who understands the situation is enough to convince almost any of them.

However, the Florida system of nursery inspection is growing in favor at home and in other states. Some nurserymen, who at first thought it would be a burden, have learned to fit it in with their regular work and have discovered that it was not a great task and furnishes them a valuable check. For example, we once wrote a nurseryman to account for tag such and such a number. While preparing an invoice for us,

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it occurred to him that he possibly had failed to send one to his customer. He sent the invoice and made the collection, and it amounted to over \$50.

After careful investigation both South Carolina and Mississippi have adopted the Florida regulations in total. They are as pleased with the way it works as are we in Florida. At a recent meeting of the Association of Cotton States Entomologists, the Florida scheme of nursery inspection was unanimously endorsed. The prospects are bright for having the Florida system adopted throughout the South. After that we can expect its adoption by practically every state in the Union, for it gives the planter the protection he should have and mere inspection alone will never do it. We are even winning converts among the nurserymen in other states, as witness this statement by a Michigan nurseryman, who very briefly sums up the situation as we see it, as follows:

"It would be useless to deny that wherever two or more nurserymen are gathered together, and the subject of Florida requirements comes up, your requirements are very liberally damned from hell to breakfast and back again. However, the rules as laid down by your state must be caused by conditions with which you are confronted, and will be to the ultimate advantage of the grower. It seems to me that this should be the

point toward which all of us should work—the greatest possible security for the man that plants the tree."

There is only one way that we can give the greatest possible security to "the man that plants the tree"—that is by keeping a record of the points at which certified stock is planted. Florida is doing it.



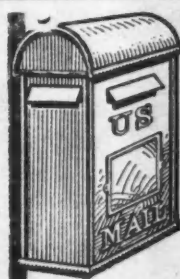
Towering in Majesty

The queen of palms, so easily grown in Florida, excels in dignity.

Your home may be beautified and its value greatly increased at small expense by the planting of this and other fine ornamental trees, shrubs and vines.

Write now for our copy of "Tropical Grounds Book"—sent to you free on request.

REASONER BROTHERS
Royal Palm Nurseries
ONECO, FLORIDA



**Write us!
Right away!**

For free copy of our handsome 1921 catalog. This book contains much helpful information about the trees, shrubs and plants best for Florida deciduous fruit orchards, home grounds, nut groves, etc. It describes

Florida Varieties of Peaches, Plums, Grapes Figs, Mulberries, Pecans, Ornamentals, Roses

and many other classes, giving cultural direction, sizes and prices. Ask also for gift copies of five service bulletins, devoted to the above and other ornamentals, nuts and fruits and telling just how to grow them. Address

Inter-State Nurseries
C. M. Griffing & Co., Jacksonville, Fla.

Special.—Don't overlook the value of mulberries for chickens and hogs. Plant some this year.



CLASSIFIED ADVERTISEMENTS

NURSERY STOCK

EARLY BEARING Papershell Pecan trees, budded or grafted and guaranteed. Great shortage this year. Write for catalog today. Baas Pecan Company, Lumberton, Miss.

Citrus Trifoliata Seedlings: 10-12 inches \$10.00 per thousand; 12-18 inches \$15.00 per thousand; 18-24 inches \$20.00 per thousand. Griffing Nurseries, Port Arthur, Texas.

MISCELLANEOUS

We Collect Accounts, Notes—Claims, anywhere in world. No charges unless we collect. May's Collection Agency, Somerset, Ky. 6-20—2t

Make your own paints, varnishes, stains, turpentine, oil and shellac at one-half the dealers' price. Complete set of all these formulas for 25 cents. Wm. McDermott, 6521 South Justine St., Chicago, Ill.

REAL ESTATE

LOOKING for Florida property for home or investment? Fruit, truck, poultry or stock farms? Orange groves, winter homes? Write Dr. Fellows, Newburyport, Mass. New England agent Crystal Lake Subdivision. Apr.—3t.

FRUIT AND BERRY LANDS—What do you want to grow? How much land do you want and what terms? Railroad Farm Bureau, San Antonio, Tex.

IF YOU WANT to sell or exchange your property write me. JOHN J. BLACK, 180th St., Chippewa Falls, Wis. m-3t

Ten acres good citrus land, high, well drained; Indian River section, St. Lucie county; one mile from East Coast Railroad; same distance from Indian river;

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500 dollars. Boon, 127 Gray Court, Birmingham, Mich.

FOR SALE—Choice California citrus lands. One dollar per acre monthly. R. B. Davy, Hayward, Calif. Nov.-2t

For Sale—10 acres citrus land at Roseland, Indian river, \$50 per acre. Boon, 127 Gray Court, Birmingham, Mich.

WANTED—To hear from owner of land for sale. O. K. Hawley, Baldwin, Wisconsin. 1t

RABBITS

Read "RABBIT JOURNAL," St. Francis, Wis. Two years \$1 trial 25c. 1t

POULTRY

S. C. RHODE ISLAND RED EGGS of fine quality, 3, 4 and 5 dollars per 15. Prize winners. Miss Erma Louise Singleton, Box A, Dubard, Miss.

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Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912 of The Citrus Industry, published monthly at Tampa, Florida, for April 1, 1921:

State of Florida,
County of Hillsborough.

Before me, a Notary Public, in and for the state and county aforesaid, personally appeared S. L. Frisbie, who, having been duly sworn according to law, deposes and says that he is the editor of The Citrus Industry, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1—That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, Associated Publications Corporation, Tampa, Fla.
Editor, S. L. Frisbie, Tampa, Fla.
Managing editor, S. L. Frisbie.
Business manager, S. L. Frisbie, Tampa, Fla.

2—That the owners are:
Associated Publications Corporation, Tampa, Fla.

S. Lloyd Frisbie, Tampa, Fla.
S. L. Frisbie, Tampa, Fla.
A. G. Mann, Bartow, Fla.

3—That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are:

None.

S. L. FRISBIE, Editor.
Sworn to and subscribed before me this 31st day of March, 1921.

(Seal) J. F. SUMNER,
Notary Public.

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